

Fig. 1.—Showing operating table devised for use in thyroid surgery.

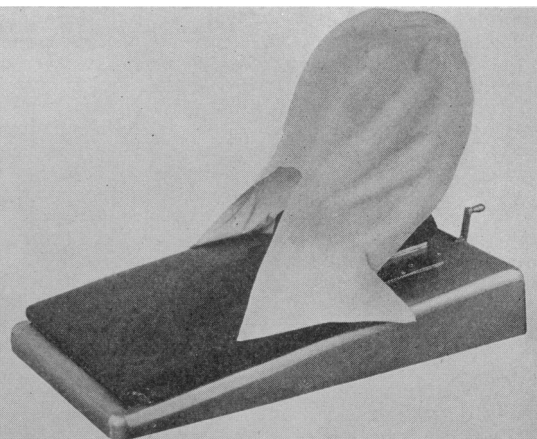


Fig. 2.—Showing use of the hood.

of surgery serves as a great handicap to the surgeon, since it is in the way of his elbow when he wishes to work from certain positions. It also limits the room of the assistants for their work.

ADVANTAGES OF THE TABLE

A device which will eliminate or minimize the discomfort to the patient, and give the surgeon and his assistants every possible advantage in doing a thyroidectomy, has been developed by the author, who suggests the following as chief advantages of his device:

Conformity to Shape of Patient.—First, it is constructed so that it will conform to the shape of each individual patient, regardless of size or form. The adjustable part is made of material which gives comfort, and yet is firm enough to keep the patient in a stable position.

Correct Elevation of Thyroid.—Second, the back rest can be mechanically raised or lowered by the simple turn of a crank (located at the head of the device) without any discomfort or inconvenience to the patient, thus making it possible to get a correct elevation of the upper thoracic and cervical region for each step of the operation. For example, when it is desired to throw the thyroid close to the surface of the neck, this can be done by raising the back rest. This rest is arranged so that the center is elevated, leaving the sides sloped for the dropping of the patient's shoulders, and the elevation of the part to be operated upon. Then, when relaxation of the tissues and muscles is required for suturing, the back rest can easily be lowered to the point where the most suitable position is desired.

Special Hood.—Third, a specially designed hood and frame make it possible for the surgeon and his assistants to work freely; for since the hood is shaped to fit over the head of the patient, the surgeon and his assistants are not hampered by the obstruction of a partition which would be in the way of their elbows while operating, and yet is sufficiently large to give ample room for the administration of an anesthetic. Because of the roominess of the hood, the patient has a feeling of perfect freedom in breathing; and this is a great advantage where only local anesthesia is

employed. The hood is especially designed to fit snugly under the chin and down the sides of the neck, with a skirt on each side sufficiently large to tuck under the patient's shoulders, thus giving a neat arrangement for keeping the field of operation absolutely sterile. It can be placed in the sterilizer without injury to the fabric, and will retain its original shape after sterilization.

Adjustability of the Head Rest.—Fourth, an adjustable head rest gives a comfortable position for a patient of any size, and assists in obtaining the desired position of the thyroid.

Adaptability to Any Operating Table.—Fifth, this device can be used on any type of operating table, simply by placing it in the correct position.

The base and hood frames are made of metal, attractively nickel-plated; and the back and head rests are neatly upholstered with a good quality of fabricoid.

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TREATMENT OF DIABETES INSIPIDUS

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VARIOUS theories have been suggested concerning the relation between the posterior pituitary lobe and water elimination. Published experimental findings indicate that the decrease in water elimination produced by injections of posterior pituitary extract is based either upon decreased filtration through the glomeruli or by increase of urine resorption in the tubules. While other authors have shown the latter to be true, Poulsson¹ has demonstrated experimentally that decreased diuresis is to be attributed to increased back-diffusion of urea into the renal tubules. This, he contends, explains the fact that urea concentration in the urine is below that normally expected according to decreased flow of urine. Pellegrini,² however, believes that in some cases of diabetes insipidus the capacity of the kidneys to furnish a concentrated urine is diminished,

while in others water diuresis is increased. Three of the four patients he studied eliminated urine low in sodium chlorid content. He concludes that posterior pituitary exerts an action on water exchange between the blood and tissues, and also on the secretion of urine. In cases where reduction of urinary secretion did not occur, there was no increase in specific gravity of urine. One other investigation of the pathogenesis of diabetes insipidus is significant. Crăciuneanu⁶ et al. in Bucharest found a marked difference in the water exchange in a patient with this disease compared with normal individuals. They state that abundant diuresis during experimental thirst was the only factor in favor of a disturbance in the process of elimination. These workers conclude that the disturbances in water exchange in diabetes insipidus are probably the consequence of a dysfunction of the kidneys and other tissues.

Whatever the cause of increased urinary output and thirst in these patients, the symptoms require immediate relief. Posterior pituitary solutions, while not curative, do give material benefit as long as either injections or intranasal applications are continued. The following case cites our experience with the use of this extract, combined with other adjuncts, during a five months' period of observation.

REPORT OF CASE

A man, aged 26, was referred to us on August 1, 1932. He had suffered a left sacroiliac strain eighteen months before, and had received physiotherapy and worn a brace until recently. Aching pains in the sacroiliac region, after effort, continued, however. Two months ago excessive thirst began and he drank about $1\frac{1}{2}$ liters of water every hour because his stomach "burned." Diurnal frequency occurred every hour, and nycturia every two hours resulted in the output of 25 to 30 liters of urine during twenty-four hours. No change in appetite was noted and no craving for sweets complained of. He had lost 10 kilos in weight during the past month. No familial history of diabetes was known. His past history revealed the habits of a normal unmarried young man. The only disease remembered was influenza in 1918 and again in 1923. Venereal infection was denied. He had fractured his right ankle in 1923, and a tonsillectomy was performed in the same year. His systems were negative. Maximum weight in 1926 was 80 kilos, average was 74 kilos, and at present is 64 kilos. General examination was essentially negative except that he was under normal weight for his height (172 centimeters), had a blood pressure of 106/74, and was slightly dyspneic on effort. Laboratory findings revealed a normal blood count, negative Wassermann and Kahn reactions, a normal stool, and a basal metabolic rate of ± 0 per cent. Fasting blood sugar was 220 milligrams per cent when first seen, and ten days later dropped to 138.9 milligrams per cent. The first speci-

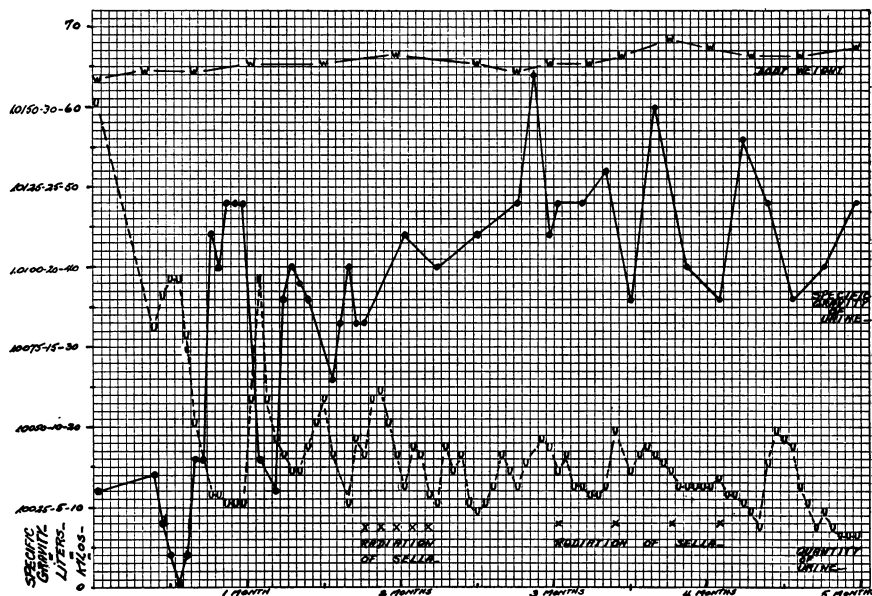


Chart 1.—Progress of patient under treatment for diabetes insipidus.

men of urine was clear, pale straw-colored, acid reaction, and the specific gravity was 1.003. Tests for albumin, sugar, acetone and diacetic acid were negative. The sediment was normal except for a few small clumps of bacteria. Roentgenologic examination of the sella tursica revealed that it was small and apparently completely bridged on the left side. There was no evidence of fracture, bony injury, or tumor.

Treatment consisted of giving the patient a low carbohydrate diet, administration of posterior pituitary by various routes, together with other adjuncts, with the results noted in Table 1. Pituitary extract orally did not decrease urine excretion, nor did local applications of pitressin to the nasal mucosa. A maintenance daily dose of one cubic centimeter of pituitary extract (twenty international units hypodermically) was required to give symptomatic relief. Toward the end of the second month of treatment, radiation of the sella was tried in an effort to further reduce water elimination. Five doses were given over a ten-day period with a satisfactory response, as noted in the table. A month later four more exposures (total of 3000 r on the right and 1500 r on the left) were made at ten-day intervals to the end of the fourth month, with a drop in urine output to four liters in twenty-four hours. At this time massage of the lumbar muscles was instituted, and the pelvic tilt was corrected by placing a lift under one heel. When last seen professionally the patient was excreting three liters daily and was symptom-free.

The specific gravity of the urine during our observation varied more or less inversely proportional to the quantity excreted. At the onset the specific gravity was from 1.000 to 1.003, and the urine output 20 to 30 liters daily. Marked fluctuation of specific gravity was noted during the treatment period, but at the end a rise to 1.012 occurred, while the urine excretion was reduced to about three liters. A slight increase in weight occurred.

Variations in blood pressure were noted with a gradual increase to normal (124/74) when last seen.

SUMMARY

Although the mechanism of action of posterior pituitary substance in decreasing water elimination in diabetes insipidus is not known, definite decrease in urinary output occurs when the extract is given hypodermically in this disease. The specific gravity of the urine is roughly inversely proportional to the amount excreted. One cubic

centimeter of the extract (twenty international units) was required daily to render a patient symptom-free. The adjuncts, *i. e.*, radiation of the sella tursica (even in the absence of tumor) and physiotherapy, were resorted to in the case reported. Our observations confirm those of Faelli,⁴ who found roentgen exposures of the hypophyseal region combined with posterior pituitary therapy more effective than exclusive treatment with pituitary alone.

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UNUSUAL EMBRYONAL DEVELOPMENT ERROR*

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CERTAIN congenital deformities are more or less commonly seen in living infants, as club-foot, harelip and cleft palate, branchial cysts or fistulae, spina bifida and meningoceles, malformations of the genital and urinary tracts, as well as maldevelopments of the alimentary canal, imperforate anus, pyloric stenosis, and nonformation of various segments, and the like. Many more errors in development of the embryo are found in the dead fetus, such as absence of extremities, and monstrosities of various kinds.

The case I am presenting is apparently an error in development in one of the lower embryonal buds. According to anatomical authority¹ in embryology, the lower-limb buds commence as anterior and posterior folds at the lower end, or tail, of the embryo for the formation of the thigh and leg at about the third week of intra-uterine life. These folds and the forming limb bud should be approximately the same size on each side. The development of this part of the body occurs later than that of the upper portions of the body.

REPORT OF CASE

A baby girl, at present five months old, after an instrumental delivery at the hospital was found by the mother, upon the arrival of both at home, to have an inequality in the size and contour of the lower extremities. The baby was brought to me when about two months old. There was nothing unusual about the infant at this time except an apparent exophthalmos (which was found to be a family characteristic), a condition of protein and mineral deficiency in the diet, and an easily discernible difference in the lower limbs. Both limbs were apparently normal in development as regards bone and soft tissue structure. There was no evidence of lymph block, or of interference with the circulation anywhere suggestive of pseudo-elephantiasis or hyperplasia due to increased nutrition and stimulation of the affected area. The right lower part,

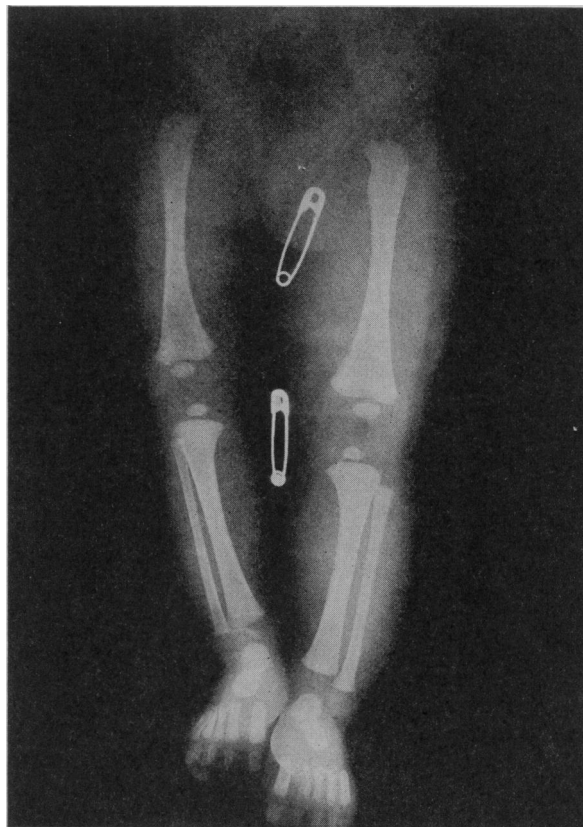


Fig. 1.—Showing asymmetry of extremities.

from the lumbar region down, was uniformly larger than the left, buttock, hip, labia, thigh, and leg. Measurements to contrast the limbs were taken as accurately as possible, and were as follows:

- Left anterior spine superior to tip of fibula, 6 7/8 inches.
- Right, 7 1/4 inches.
- Left mid-thigh diameter, 4 15/16 inches.
- Right, 5 7/16 inches.
- Left calf, mid-diameter, 3 3/4 inches.
- Right, 4 3/16 inches.

Figure 1 clearly shows the asymmetry in the limbs, both bone and soft parts; and there seems to be a difference in the size of the ilia as well.

The family history is essentially negative as to malformations or deformities in the past; there is a questionable history of tuberculosis in a maternal grandparent, while the parents of this child are both exceptionally well-developed, physically and mentally, and two sisters of the baby are strong healthy girls, with well-developed, sound bodies.

In the baby, the head, upper extremities, and other parts of the body seem to match with the left leg; the right lower part being definitely an error in development.

COMMENT

Many theories as to the etiology of such a condition may be drawn, such as endocrine unbalance, which does not seem probable when only one limb bud is involved. Circulatory nutritional disturbance, due to anomalous blood vessels, seems ruled out by the height of the disproportion, as well as the definite bone difference. It seems to be an original difference in the cells of the group forming the folds of the limb bud, or a difference in the reaction in the group to the cell growth-stimulating agency, whatever that may be.

* Read before the thirtieth annual session of the Nevada State Medical Association, Las Vegas, September 29, 1933.